

REMARKS

Of the 6 original claims, claim 1 is amended. With this response, claims 1-6 are now pending.

Claim 1 was amended to bring the claim into compliance with proper claim format. Applicant asserts that no new matter was added in making this amendment.

Applicant does not believe that any fees are due at this time; however, should any fees under 37 C.F.R. §§ 1.16 to 1.21 be required for any reason relating to this document, the Commissioner is authorized to deduct the fees from Locke Liddell & Sapp LLP Deposit Account No. 12-1322, referencing matter number 021944.070US.

I. Rejection under 35 U.S.C. § 103

For the convenience of the Examiner and clarity of purpose, Applicant has reprinted the substance of the Office Action in ***10-point bolded and italicized font***. Applicant's arguments immediately follow in regular font.

2. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maynard et al. (U.S. Patent No. 3,955,122) in combination with Casey et al. (U.S. Patent No. 6,407,901).

Maynard et al. disclose the claimed invention a heat sink (figures 1-10). However, Maynard et al. does not disclose the utilization of the technique for a first switch module connected to the heat sink, the first switch module having first and second switch device and a second switch module connected to heat sink, the second switch module having first and second switch device each switch device having gate terminal; a first power source input terminal connected to a cathode terminal of the second switching device of the first switching device of the second switch module; an output terminal connected to an anode terminal of the second switching device of the first switch module and a cathode terminal of the first switching device of the second switch module wherein the gate terminals of the switching device are controllable that the first switch module conduct during a first portion of the power duty cycle and the second switch module conducts during a second portion of the duty cycle. Casey et al. teaches the utilization of the similar technique for a first switch module (figure 2, item 40) connected to heat sink, the first switch module having first and second switch device (figure 2, item 60) and a second switch module (figure 2, item 41) connected to heat sink, the second switch module having first and second switch device (figure 2, item 80) each switch

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device having gate terminal (figure 2, item 70 and 90); a first power source input terminal (figure 2, item 24) connected to a cathode terminal of the second switching device of the first switching device of the second switch module; an output terminal connected to an anode terminal of the second switching device of the first switch module and a cathode terminal of the first switching device of the second switch module wherein the gate terminals of the switching device are controllable that the first switch module conduct during a first portion of the power duty cycle and the second switch module conducts during a second portion of the duty cycle. It would have been obvious to one having an ordinary skill in the art at the time the invention made to modify Maynard et al.'s heat sink by utilizing the technique taught by Casey et al. for the purpose of providing line protection circuit.

Applicant respectfully traverses this rejection of claims 1-6. Applicant contends that neither Maynard, et al. (hereinafter "Maynard") or Casey et al. (hereinafter "Casey"), alone or in combination, disclose or teach the switch assemblies recited in claims 1-4 or the methods recited in claims 5-6. According to MPEP § 706.02(j), for a claim to be obvious, there must be a) a suggestion or motivation to combine reference teachings, b) a reasonable expectation of success, and c) the references must teach all of the claim limitations, *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). The Examiner has not identified any teaching or suggestion with Maynard or Casey for combining the references in the manner suggested by the Examiner.

Applicants presently claimed invention describes a switch assembly and method of operating a switch assembly which increases heat dissipating capabilities of heat sinks using two switch modules. As specifically stated in the specification, and as shown in Figures 4, 5, and 6, when either the primary or secondary AC source at terminals 23 or 24 is supplying power to the load at terminal 25, one SCR (silicon controlled rectifier) in each of the SCR modules (21 and 22) is conducting during half of the duty cycle, thereby "splitting" the duty cycle between the two switch modules 21 and 22. As specifically stated within the specification, and as illustrated in FIGs. 5-6, "if the primary AC source at terminal 23 is supplying power to the load, during the positive half cycle SCR 27a conducts and during the negative half of the cycle SCR 26b conducts, supplying current to the load" (page 3 of published application, paragraph [0035]).

Similarly, when the secondary AC source at terminal 24 is supplying power to the load, SCR 26a conducts during the positive half cycle, and SCR 27b conducts during the negative half cycle. As such, the duty cycle is split between the two switch modules 21 and 22, thereby reducing the heat generated by each of the switch modules if they were to be functioning alone.

To the extent that Maynard teaches a heat sink/heat-dissipating element, it fails to teach the switch assembly of the Applicants claimed invention. In fact, the office action only asserts Maynard discloses a heat sink; the office action admits that Maynard fails to disclose or even suggest the bulk of the recited claim elements.

Casey is directed to an integrated semiconductor module for use in protecting telephone line equipment from overvoltage and overcurrent conditions. As illustrated in Figure 2, and as described in the specification, the semiconductor module comprises a cathode, anode, gate terminal, plurality of semiconductor regions, and a resistor having a gate-cathode shunt resistance value of 2-4 ohms corresponding to an overcurrent threshold of about 300-350 mA.

No mention or suggestion of a heat sink is made, especially of the type as described by Maynard. According specifically to the specification, with reference to Figure 2, "when a current of about 300 milliamp is carried on the tip conductor 16, irrespective of the polarity thereof, the gate-cathode shunt resistance 74 will develop the requisite gate-cathode threshold voltage to trigger the bidirectional device 60, thereby effectively short circuiting the tip conductor 16 to ground via the ground line 24. Overcurrent protection is provided in the same manner by the other bidirectional device 80, with respect to the ring conductor 18 and the ground line 24." (Column 8, lines 8-16).

The office action references the bidirectional devices 60 and 80 of Casey, though there is no suggestion or motivation to connect these devices to a heat sink. Further, any equivalence

asserted by the examiner between the bidirectional devices 60 and 80 described by Casey and the switch assembly of Applicants invention is inappropriate, as the two features function differently. More specifically, Casey describes a system wherein each of the incoming lines/conductors is associated with an independently functioning integrated circuit (i.e., 40 and 41 in FIG. 2 of Casey), which independently act to provide overcurrent protection. As stated above, Applicant describes a switch assembly wherein both of the switch modules are used in combination in switching operations in order to make use of the entire heat sink and improve heat dissipation. The combination of Maynard and Casey is inappropriate, and in any case would not teach the switch assembly of the present invention wherein the duty cycle is split between two switch modules in order to reduce the heat generated by such modules.

For the foregoing reasons, independent claims 1 and 5 are not obvious over Maynard in combination with Casey. Claims 2-4 and 6 depend from Claim 1 and Claim 5, respectively, and thus, are non-obvious for the reasons expressed above.

Neither reference suggests combining the teachings. Furthermore, the two references do not teach all of the claim limitations for pending claims 1-6. Accordingly, Applicant requests that the rejections of claims 1-6 under 35 U.S.C. § 103 be withdrawn.

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In light of the above amendments and remarks, reconsideration and withdrawal of the outstanding objections and rejections are respectfully requested. All amendments are made in a good faith effort to advance the prosecution on the merits. Applicant respectfully submits that no amendments have been made to the pending claims for the purpose of overcoming any prior art rejections that would restrict the literal scope of the claims or equivalents thereof. Applicant

reserves the right to subsequently take up prosecution of the claims originally filed in this application in continuation, continuation-in-part, and/or divisional applications.

The Examiner is encouraged to call the undersigned should any further action be required for allowance.

Respectfully submitted,



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July 7, 2005